

REMARKS

The Examiner's attention to the present application is noted with appreciation. Claims 1-66 are currently pending. Claims 1, 3, 9, 13, 43, and 44 have been amended. Claim 12 has been cancelled.

35 U.S.C. 132

In the Detailed Action of the Examiner, dated July 16, 2002 (Paper No. 4), the Examiner objected to the amendment filed January 31, 2002 under 35 U.S.C. 132 as introducing new matter into the disclosure. Applicant respectfully traverses the objection.

With respect to the amendment to the specification at page 1, inserting "and act as a strong demulsifier", Applicant has previously amended the specification at page 6 (which amendment has been entered into the record by the Examiner) to indicate the amine component of the invention comprises a demulsifier. In order to facilitate examination, the Applicant has amended the specification at page 1 to delete the word "strong" before demulsifier, otherwise, the statement, as amended, is clearly supported by the specification at p. 6, line 7, such that no new matter has been added.

With respect to the amendment to the specification at page 4, last line, in order to facilitate examination, the Applicant has amended the specification to its original phrasing.

With respect to the amendment to the specification at page 8, line 23, changing "0.5 parts" to "0.05 parts", such an amendment is clearly supported as correcting a typographical error. The broad range cited in this paragraph is "between approximately 0.01 and 0.25 parts by weight". The narrower, more preferred range is "between approximately 0.03 and approximately 0.01 parts per weight", therefore the most narrow value (as originally mistyped and filed in the specification as "0.5 parts by weight"), will

logically not be outside of the broad range disclosed, but instead clearly must fall within that broad range. Therefore, no new matter has been added since the value, as amended, "0.05 parts" falls within the ranges cited. The Applicant has additionally newly amended the specification to adjust the preferred range to include the 0.05 value disclosed in the broad range and cited as the most preferred value.

With respect to the amendment to the specification at page 9, line 14, the broad range cited in the paragraph comprises "up to approximately 0.2 parts by weight". The next more narrow range within the broad range cited "0.05" as the lower end of the range. Given the broad range of "up to approximately 0.2 parts by weight", any value between 0 and 0.2 falls within the disclosed range, such that the "0.05 parts", as amended, to a value "0.005 parts", falls within the disclosed broad range. This was done to correct a typographical error. The "0.3 parts" set forth as the most preferred value in the directions portion of the preliminary amendment (but not carried through to the full paragraph setting out the amendment) unfortunately was also a typographical error which has been newly amended to reflect the most preferred value of "0.03 parts" by weight, which clearly falls within the broad disclosed range as discussed above. Therefore, no new matter has been added since the amended values are clearly within the cited range.

With respect to the deletion at page 12, lines 8 and 9, the Applicant is unsure how deletion of material constitutes adding new matter unless the deletion alters the meaning of the remaining matter. The Applicant notes that it has, in these lines, referenced the availability of additional data which was not subsequently provided in the specification (as originally filed). Therefore, Applicant seeks to clarify the specification to omit the reference, thereby preventing confusion to the reader since Applicant cannot now add the referenced data into the specification to avoid such confusion (given that such an insertion would constitute new matter). Therefore, the deletion only clarifies the specification, and its removal does not

alter interpretation of any necessary material to the invention, such that its deletion cannot constitute new matter.

With respect to the insert at page 13, in Table 2, Applicant merely attempts to clarify the table since identification of what units the values cited constitute was inadvertently omitted. That the values cited, whatever units they may be, comprise proportionate units is inherent. Also, since the values in Table 1 are expressed as percentages, it would be expected and understood that values in Table 2 would also be so expressed. If the examiner chooses to somehow view designation of these similar proportionate values as percentages to be addition of new matter, then Applicant will willingly delete the insertions on line 1 and below Table 2 to facilitate a speedy examination.

With respect to the deletions of the term "'462 patent" and insertion of "prior art" (Page 13, lines 15, 20, page 14, line 2 of paragraph 3), the Applicant is unsure how substituting the equivalent term "prior art" is new material since the '462 patent is prior art. Therefore, the Applicant requests clarification of the objection. However, if the Examiner views the term "prior art" to somehow be new matter, Applicant will willingly delete the changes to facilitate a speedy examination.

With respect to the deletion at page 14, line 2 of the phrase "a simulation for " and the deletion of the term "catalyzes" at line 3 and substitution thereof of "promotes", although Applicant believes that the changes result in an equivalent, easier to understand phrase, the Applicant has amended the specification to its original phrasing to facilitate examination, with the exception of the substitution of the term "accelerates" for "catalyzes". "Accelerates" is a known equivalent term to "catalyzes" and therefore does not add new matter to the specification.

With respect to the substitution of "percent" for the terms "o.u." and "optical units" in lines 2-5 of page 14, while the Applicant maintains that the phrases are known to be equivalent in the art and were made for clarity, Applicant has amended the specification to its original phrasing to facilitate examination.

35 U.S.C. 112

In the first paragraph, page 3, of the Office Action, the Examiner rejected claim 38 under 35 U.S.C. 112, first paragraph. As discussed above, the range of "approximately 0.005 to approximately 0.150" is supported by the specification at p. 9, in the paragraph beginning on line 12. The specification states that the metal deactivator of the invention comprises "up to approximately 0.2 parts by weight" which clearly includes the range set forth in claim 38. Therefore, Applicant respectfully traverses the rejection and requests reconsideration of same in view of these arguments.

In the second paragraph, page 3, of the Office Action, claims 3-5 and claims 43-44 were rejected by the Examiner under 35 U.S.C. 112, second paragraph, as being indefinite. The dependency of claim 3 was a typographical error, which has now been corrected to depend from claim 2. (Claims 4 and 5 depend from claim 3.) Likewise, the reference to "lubricant" has been removed from claims 43-44.

35 U.S.C. 103(a)

On page 4 of the Office Action, fourth paragraph, Claims 1-66 were rejected by the Examiner under 35 U.S.C. 103(a) as being unpatentable over Kitchen III, U.S. Patent Nos. 4,609,379 and 4,585,462 in view of Valentine et al., U.S. Patent No. 5,550,714 and Hinkamp, U.S. Patent No. 4,336,033. As noted by the Examiner in her rejection, the Kitchen III patents do not teach the iron organometallic compound of

the present invention. The remaining prior art disclose only fuel additives to improve combustion and do not have the added benefit of the present invention, which also acts as a fuel stabilizer. Further, the compositions of the prior art are known to cause "red mud." Red mud is a rust that can be observed in the combustion chamber of an engine and cause a vehicle to stall out. This red mud is caused by too great a concentration of organometallic compounds in the additive/fuel. In the present invention, the surprising discovery was made that use of a lower concentration of organometallic compound actually results in better engine protection, and that the lower concentration does not give rise to production of the "red mud". In particular, Applicant's invention uses a greatly reduced organometallic compound concentration to achieve improved combustion, stabilization, emissions control, and cleaner fuel, without the resultant fouling of the combustion chamber as found in the prior art. In fact, it was unexpectedly found that with the additive of the present invention, a catalytic converter is not even necessary.

In the present invention, the disclosed level of the organometallic compound is less than or equal to approximately 10 ppm at its highest disclosed concentration rate of 0.01 parts by weight and a dilution rate in fuel of 1/1000. The preferred range comprises a level of 0.01 to 2 ppm when diluted in fuel compared to the prior art concentrations of between 7.67 and 7690 ppm in the fuel. All of the prior art cited contains greatly increased levels of the organometallic over the present invention, which can cause the above-noted problems. For instance, the '462 Patent utilizes levels of 25 ppm of organometallics (and no iron-containing organometallics) in the fuel while the Hinkamp Patent utilizes approximately 350-7690 ppm of iron pentacarbonyl in the fuel (expressed as values of g/gal at Col. 3, lines 4-7). Valentine teaches using metal compounds such as iron salts at levels of 1-100 ppm and preferably 30-60 ppm in the fuel (Col. 13, first partial paragraph) *in combination* with its platinum metal catalyst at levels of 6.67-267 ppm (Col. 12, paragraph 13, expressed as values of mg/l). This gives a combined value of 7.67 ppm at the low end of the disclosed range, but it should be noted that Valentine's preferred range comprise much greater

levels. For example, just looking at the preferred levels of the iron salts *only*, Valentine teaches 30 ppm in the fuel, well above the levels of the present invention. Kitchen '379 lacks the organometallic compound altogether.

In light of the above, claim 1 has been amended to recite that the organometallic compound is utilized at a level of "between approximately 0.0001 and approximately 0.01 parts by weight, said fuel additive having a total part by weight of 1, wherein the resulting concentration level is less than 7.67 ppm in a fuel."

It is believed that all of the claims, as amended, are allowable over the prior art. If the Examiner has any questions, please contact the undersigned.

A check for additional claim fees is attached. Authorization is given to charge payment of any additional fees required, or credit any overpayment, to Deposit Acct. 13-4213. A duplicate of this paper is enclosed for accounting purposes.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached paper is captioned "**Version with Markings to Show Changes Made.**" An earnest attempt has been made to respond to each and every ground of rejection advanced by the Examiner. However, should the Examiner have any queries, suggestions or comments relating to a speedy disposition of the application, the Examiner is invited to call the undersigned.

Reconsideration and allowance are respectfully requested.

Respectfully submitted,

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Version with Markings to Show Changes Made

In the Specification:

On page 4, in the paragraph beginning on line 26, in line 27, delete --usable-- before "higher".

Another object of the present invention is to provide a fuel additive which allows a fixed amount of fuel to produce a [usable] higher BTU output.

On page 8, in the paragraph beginning on line 19, in line 21, change "0.03" to --0.05".

The lubricant of the present invention preferably comprises between approximately 0.01 and 0.25 parts by weight of the total composition. The lubricant more preferably comprises approximately 0.05 and approximately 0.1 parts by weight, and most preferably comprises approximately 0.05 parts by weight.

On page 9, in the paragraph beginning on line 12, in line 13, change "0.3 parts" to --0.03 parts--.

The metal deactivator of the present invention preferably comprises up to approximately 0.2 parts by weight of the total composition. The metal deactivator more preferably comprises between approximately 0.005 parts and approximately 0.15 parts by weight, and most preferably approximately 0.03 [0.03] parts by weight.

On page 14, in the paragraph beginning on line 1, in line 2, insert "a simulation for". On page 14, in line 3, insert "accelerates" and delete therefor --promotes--.

Each sample was heat stressed at 300°F for approximately 10 minutes, then allowed to cool for approximately 10 minutes. The heat stress is a simulation for accelerated aging of the sample. The heat

accelerates [promotes] repolymerization of the fuel, thereby simulating aging. Normally, the fuel would be stored in underground tanks at approximately 55°F over a period of years.

On page 14, line 11, delete "percent transmission" and insert therefor --optical units (o.u.)--. On page 14, line 12, delete "percent" after "48" and insert therefor -- o.u. -- and after "21". On page 14, line 13, delete "percent" after "24" and insert therefor -- optical units --. On page 14, line 13, delete "percent" after "50" and insert therefor --o.u.-- and after "26" and insert therefor --o.u.--. On page 14, line 14, delete "percent" after "5" and insert therefor -- optical units --. On page 14, line 15, delete "percent" after "48" and insert therefor --o.u.-- and after "43" and insert therefor --o.u.--.

The testing showed a change in opacity for the blank fuel test tube of 27 optical units (o.u.) [percent] transmission, having an initial reading of 48 o.u. [percent] and an end reading of 21 o.u. [percent]. The prior art composition showed a change in opacity of 24 optical units [percent], having an initial reading of 50 o.u. [percent], and an end reading of 26 o.u. [percent]. The composition of the present invention showed a change in opacity of 5 optical units [percent], having an initial reading of 48 o.u. [percent], and an end reading of 43 o.u. [percent]. The ΔT , or change in transmission, showed only a minor change in the composition of the present invention. More drastic changes occurred in the compositions of the prior art and blank tests, indicating agglomerations within the fuel in those samples.

In the Claims:

Please amend the claims as follows:

1. (Amended) A fuel additive comprising:
a fuel stabilizer; and

an [iron-containing] organometallic compound comprising between approximately 0.0001 and approximately 0.01 parts by weight, said fuel additive having a total part by weight of 1, wherein the resulting concentration level is less than 7.67 ppm in a fuel.

3. (Amended) The fuel additive of claim [1] 2 wherein said high molecular weight amine comprises at least twelve carbon atoms.

9. (Amended) The fuel additive of claim 1 further comprising an organometallic compound selected from the group consisting of Fe, Mn, Pt, Ce, and mixtures thereof.

13. (Amended) The fuel additive of claim [12] 1 wherein said organometallic compound comprises between approximately 0.001 and approximately 0.005 parts by weight.

43. (Amended) The fuel additive of claim 19 additionally comprising a [lubricant and a] biocide.

44. (Amended) The fuel additive of claim 19 additionally comprising a [lubricant and a] metal deactivator.

Cancel claims:

12. The fuel additive of claim 1 wherein said organometallic compound comprises between approximately 0.0001 and approximately 0.01 parts by weight, said fuel additive having a total part by weight of 1.